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AEWA EUROPEAN GOOSE MANAGEMENT PLATFORM

5th MEETING OF THE AEWA EUROPEAN GOOSE MANAGEMENT INTERNATIONAL WORKING GROUP

15-18 June 2020, Online conference format

DECISIONS, ACTIONS AND NEXT STEPS IN THE PROCESS FOR THE DEVELOPMENT OF THE ADAPTIVE FLYWAY MANAGEMENT PROGRAMMES FOR THE BARNACLE GOOSE

EAST GREENLAND/SCOTLAND & IRELAND POPULATION

SVALBARD/SOUTH-WEST SCOTLAND POPULATION

The 5th Meeting of the AEWA European Goose Management International Working Group is taking place remotely in an online conference format.

AEWA EUROPEAN GOOSE MANAGEMENT PLATFORM

MEETING ON THE BARNACLE GOOSE ADAPTIVE FLYWAY MANAGEMENT PROGRAMMES DEVELOPMENT PROCESS

1 October 2019, Reykjavík, Iceland

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Agreed Steps for the Development of the AFMPs

The development of the AFMPs requires a number of steps that are highly dependent on the availability of funding, human resources and time, to provide a transparent management process that is informed by robust science.

Table 1 outlines the decisions and actions that are required in the process and that have been agreed by the Range States at the Meeting of the Barnacle Goose Adaptive Flyway Management Development Process which took place in Reykjavik, Iceland on 1 October 2019.

The data requirements identified to ensure the timely delivery of each step in the process for the development of the AFMP for the East Greenland/Scotland & Ireland population and the Svalbard/South-West Scotland population of the Barnacle Goose are described in Table 2.

Range States of the East Greenland/Scotland & Ireland population and the Svalbard/South-West Scotland population of the Barnacle Goose are requested to carefully review and agree on the actions as well as associated costs and resources needed for the process and to communicate to the Secretariat if resources (in form of staff time, funding, expertise, etc.) can be provided.

It should be noted that only if all data and resource requirements are provided in due time, the AFMPs will be delivered by the agreed deadlines. Hence, we urge you to inform the Secretariat (eva.meyers@unep-aewa.org) of any commitments at the latest by the 25th of October.

The meeting on the Barnacle Goose Adaptive Flyway Management Programmes development process was hosted by the Icelandic Ministry for the Environment and Natural Resources and the Icelandic Institute of Natural History.

Table 1. *Decisions and Actions agreed at the Range State meeting for the development of the Barnacle Goose AFMPs for the East Greenland/Scotland & Ireland population and the Svalbard/South-West Scotland population.*

Decision / activity	Responsibility	Decision/Action/Extra resources needed	Timeframe for decision or funding to be provided
AFMPs process agreed	Range States	**Decision**: Structure of AFMP agreed (identical to the structure agreed for the Russia/Germany & Netherlands population at EGM IWG4)	Agreed at the meeting on 1 October
AFMP compilation	External Consultant	**Action**: Secretariat to provide a breakdown of tasks and costs (*see Annex 1 to this document*)	AFMPs to be ready by: E Greenland Population: June 2020 Svalbard Population: June 2021
MUs agreed	Range States	**Decision**: Svalbard: 1 MU E Greenland: 2 MUs (*see Annex 3 to this document for the implications of having 1 MU vs having 2 MUs*) **Action:** Range States to consider the implications as described in Annex 3 and confirm their decision on one vs two MUs	Svalbard population MU delineation agreed at the meeting on 1 October; E Greenland population MU delineation to be decided by 25th October
FRVs agreed	Range States	No extra resources needed (if accepted as presented in the revised BG FRV document circulated to the EGM IWG on 7th October 2019)	Spring 2020 (end of March)
Collate data for Box 1	EGMP Data Centre Range States (provide data & funding) International Modelling Consortium, Agri Task Force	**Action:** Secretariat and Data Centre will circulate a document outlining the predicted amount of work and resources required. (*see Annex 2 to this document*)	Proposal circulated by 11 October 2019
Development of population models	EGMP Data Centre	**Action:** Secretariat and Data Centre will circulate a document outlining the predicted amount of work and resources required, as well as	Proposal circulated by 11 October 2019

	International Modelling Consortium	the expertise needed for members of the Modelling Consortium. (*see Annex 2 to this document*)	
Development of impact models	EGMP Data Centre International Modelling Consortium	**Action:** Secretariat and Data Centre will circulate a proposal outlining the predicted amount of work and resources required, as well as the expertise needed for members of the Modelling Consortium. (*see Annex 2 to this document*)	Proposal circulated by 11 October 2019 *Expertise for the Modelling Consortium will be circulated separately

Table 2. *Data needs for the development of the Barnacle Goose AFMPs for the East Greenland/Scotland & Ireland population and the Svalbard/South-West Scotland population).*

Purpose / activity	**Type of data**	**Decision/Action/Extra resources needed**
Population models	**Capture-Mark-Recapture material (leg-banding and metal ringing)**	Data not essential, but good to have for survival analysis and exchange
Population models and assessment of impacts of derogations and harvest	**Population counts**	• Surveys should be aimed at 2 or 3 year intervals • Scottish annual counts • Breeding bird counts needed in Iceland in regular intervals • Bird ringing in Faroes and annual surveys of breeding birds
Population models and assessment of impacts of derogations and harvest	**Off-take under derogations and hunting and their seasonal distribution**	Provision of harvest and derogation information
Productivity	**Wing samples of breeding birds and migrating birds in Iceland and Scotland (Islay)** **Age counts in Scotland**	• Iceland to start sampling this data • Scotland to provide age counts for both BG populations
Agricultural impact assessment	**Damage assessment, compensation, subsidies paid, derogation off-take statistics (according to the indicators proposed by the Agricultural Task Force)**	• Provide information on damage assessment in Scotland • Iceland to develop a cost-effective assessment
Air safety risk assessment	**Bird strike statistics**	• Data Centre to undertake a survey

Ecosystem impact assessment	**Measurements of tundra degradation; effect on breeding meadow birds**	• Time series available from Svalbard (Ny Aalesund)
Population model updates	**Population counts (summer)**	• Summer counts in Iceland and Faroes
Agricultural impact models	**Damage assessment statistics**	• Pending development of impact models

Annex 1. Compilation of the AFMP

Subject to resources, this task will be completed ideally by the same consultant that is compiling the AFMP for the Russia/Germany & Netherlands population of the Barnacle Goose.

The following tasks are required for the compilation of each AFMP:

Tasks for AFMP compilation	**Approx. working hours**
Compile introduction	3
Summarize FRVs	2
Summarize cumulative impact of derogations and legal hunting	2
Develop monitoring indicators and programmes	24
Develop protocols for the iterative phase	8
Compile MU-specific workplans	4
Support Data Centre with compilation of Box 1	8
Produce final draft after consultation with RS	16
Total hours	67
Total costs incl. 13% PSC (EUR 76,4 /h)	**5.785**

Annex 2. Breakdown of activities, costs and expertise needed for the collation of data for Box 1 and for the development of population & impact models for the East Greenland/Iceland and Svalbard populations (DC=Data Centre; MC=Modelling Consortium; RS=Range States)

Activity	Responsibility	Action	Time frame	Budget required	Remarks
Documentation Box 1 Barnacle Goose ISSMP					
Characterization of the spatial and temporal extent and trends of damage to agriculture	DC+RS	Update of survey by DC amongst RS; compiled and analysed by DC	Oct 2019 - Jan 2020 (Jan 2021 for Svalbard pop)	DC funded; RS in kind	
Characterization of the spatial and temporal extent and trends of risk to flora and fauna	DC+RS	Update of survey by DC amongst RS; compiled and analysed by DC	Oct 2019 - Jan 2020 (Jan 2021 for Svalbard pop)	DC funded; RS in kind	
Characterization of the spatial and temporal extent and trends of risk to air safety	DC+RS	Survey by DC amongst RS and selected airports; compiled and analysed by DC	Nov 2019 - Mar 2020 (Jan 2021 for Svalbard pop)	DC funded; RS in kind	
Description of the methods applied in the past assessments for each country and recommendations for the development of future guidelines for assessments	DC+RS	Update of survey by DC amongst RS; compiled and analysed by DC	Oct 2019 - Jan 2020 (Jan 2021 for Svalbard pop)	DC funded; RS in kind	
Description of the methods applied or tested to prevent damages and to reduce risks, their effectiveness and sufficiency to tackle the problem	DC+RS	Update of survey by DC amongst RS; compiled and analysed by DC	Oct 2019 - Jan 2020 (Jan 2021 for Svalbard pop)	DC funded; RS in kind	
Understanding of the link between population level and damages or risk	DC+MC	Development of predictive impact models; using collated information for testing; to be built on an agent-based simulation system under preparation by DC	Feb 2020 - Feb 2021 (both pops)	EURO 153,600	The 153,600 EURO is for all barnacle goose pops and greylag goose; a detailed sub-budget for the E Greenland and Svalbard pops needs to be estimated
List of SPAs and other protected areas designated for the Barnacle Goose	DC+RS	List compiled by DC, to be confirmed by RS	Oct 2019 - Jan 2020 (Jan 2021 for Svalbard pop)	DC funded; RS in kind	

Management of the species and the damage inside and outside SPAs	DC+RS	Questionnaire by DC amongst RS; compiled and analysed by DC	Oct 2019 - Jan 2020 (Jan 2021 for Svalbard pop)	DC funded; RS in kind	
Tackling damage prevention inside and outside SPAs (accommodation areas, derogations, etc.)	DC+RS	Questionnaire from DC to RS; compiled and analysed by DC	Oct 2019 - Jan 2020 (Jan 2021 for Svalbard pop)	DC funded; RS in kind	
Development of population models (E Greenland and Svalbard populations respectively)					
Deciding on framework, model development, compile input data, testing, produce assessment	DC+MC	Expert group to be set up to develop and test model for E Greenland population	Nov 2019 - Apr 2020	EURO 20,000	The budget and form of cooperation between the RS, MC and DC will be agreed once data have been made available and model framework has been decided
	DC+MC	Analyse survival rates based on capture-mark-resighting/recoveries	Nov 2019 - Mar 2020 (Mar 2021 for Svalbard pop)	?	Unknown if analyses have been made; if analyses have to be made from scratch, it will require a separate budget
	DC+RS	Compile existing population monitoring, productivity, harvest and derogation shooting information	Nov 2019 - Jan 2020 (Jan 2021 for Svalbard pop)	RS in kind	
	DC+MC	Produce first assessment of cumulative impact of harvest and derogation shooting for E Greenland population	Apr - Jun 2020		
	DC+MC	Expert group to be set up to develop and test model for Svalbard population	Aug 2020 - Apr 2021	EURO 10,000	Assuming the model for the E Greenland pop

					can be used as a framework, the budget will be lower. The final budget and form of cooperation between the RS, MC and DC will be agreed once data have been made available and model framework has been decided
	DC+MC	Produce first model outputs for Svalbard population	Apr - Jun 2020		
Additional data needs					
Complete survey of E Greenland population (preferably 2-year intervals): essential	DC+RS	Fully coordinated survey in Scotland and Ireland; start spring 2020	Mar 2020 onwards	Funded by RS	
Assessment of damage caused by Barnacle Geese to agricultural crops in Iceland: essential	RS	Methodology to be discussed with DC and Agricultural Task Force	Jan - Mar 2020	Funded by Iceland	
Wing surveys of geese shot in Scotland and Iceland: high priority if Icelandic management unit is implemented	RS+DC	Compilation of age composition with seasonal breakdown of shot birds	Sep 2020 - Mar 2021	Funded by RS	
Capture-mark-resighting program: high priority if Icelandic management unit is implemented	RS+DC	Continuous CMR program to assess distribution and vulnerability to harvest/derogation of Icelandic MU	Sep 2020 onwards	Funded by RS	

Annex 3. Implications of delineating one vs two Management Units for the E Greenland/SW Scotland & Ireland population

It has been suggested to define the birds breeding on Iceland as a separate Management Unit in the AFMP for the Greenland/SW Scotland & Ireland population of the Barnacle Goose.

The concept of Management Units is applied in the context of goose management planning when management objectives for different segments of a population differ, e.g. in case of the Taiga Bean Goose the Management Units are used to apply different management strategies (hunting moratorium vs open hunting season under adaptive harvest management).

In case of the Russia/Germany & Netherlands population, some birds in the Baltic and North Sea Management Units are not considered to be naturally occurring breeding species. Consequently, the provisions of the EU Birds Directive do not apply to these birds. Management objectives are generally more protection oriented towards the Arctic-breeding Management Unit, while more control oriented towards the North Sea Management Unit. In case of the Greylag Goose, the long-distance migrants are treated differently from the sedentary ones to avoid overharvesting the former one where their ranges overlap during migration and winter.

In the case of the Greenland/SW Scotland & Ireland population there is no differentiation of management objectives between birds breeding in Greenland or Iceland, hence delineating more than one Management Unit would not be justified according to the concept applied to date for goose management purposes.

Implications for defining Favourable Reference Values

If two Management Units are delineated, this would have implications primarily on defining the Favourable Reference Population (FRP). Currently Favourable Reference Population values are proposed for the entire Greenland population based on the wintering numbers.

If Favourable Reference Populations are to be defined separately for the Barnacle Geese breeding on Iceland, then that should be set at a level that would qualify the Icelandic Management Unit in a state that would meet the criteria of being a viable components of its ecosystem on Iceland alone. This means that the population should be at least at the level of a long-term genetic Minimum Viable Population (MVP), which can be approximated by the effective population size of 500 mature individuals. The equivalent census population should be much larger and in case of other populations it was estimated at 1,426 individuals. This value should be upscaled by using a multiplier that would ensure that the risk that the population declines below this level in 100 years is less than 1%. This can be approximated by a count based or a demographic Population Viability Analysis. The problem is that both would require an amount of data that would not be available for such a recently established population.

An admissible alternative approach in the absence of better data could be to use the upscaled allometric MVP value of 2,500 pairs that could be equivalent to c. 7,500 individuals in the full census population.

However, it is important to note that this number represents only the upscaled MVP but not an ecologically functional population. The specific philosophical question here is what is the ecological function of a colonising species that deserve protection. The ecologically functional population should be defined based on the ecological role of the species in its ecosystem (e.g. grazing, food provision to natural predators, linking functions, etc.) and not on the basis of ecosystem services (recreation, hunting, etc.) which should be satisfied above the level of the Favourable Reference Population.

There would be implications for defining the Favourable Reference Range and Habitat only if the Favourable Reference Population would be higher than the Current Value. In that case, it should be investigated how much extra range and habitat would be necessary to support the FRP.

Implications for monitoring

If the Favourable Reference Population is defined for the entire Greenland population, monitoring the size and trend of the population at the wintering ground would be sufficient. If the Icelandic birds would be treated as a separate Management Unit, their numbers should be monitored separately during the breeding season in a way that the population trend and the differences in productivity and mortality rates can be established. In order to be able to assess the vulnerability of the Icelandic Management Unit to derogation or harvest in the staging and wintering quarters, it will be necessary to have a continuous capture-mark-resighting or tracking program in place. Furthermore, it would be useful to establish wing collection of harvested birds in different areas used by the East Greenland segment and the Icelandic Management Unit as well as of birds shot under derogation in Scotland to monitor differences in reproductive output and vulnerability to shooting.

Hence, implementation of an Icelandic Management Unit will have considerable extra monitoring costs.

Implications for harvest and derogation management

Treating the Icelandic birds as a separate Management Unit would mean assessment of harvest and derogation should be assessed not only at the level of the entire population but separately for the Icelandic and Greenland breeding birds. As they winter together mainly on Islay, it will be a challenging task to manage derogation shooting (or possible legal harvest after Brexit) against two sets of Favourable Reference Populations and population targets.

It will require a much better understanding of the winter distribution of Icelandic birds, their presence in comparison to Greenland breeding birds in areas where agriculture conflict exists. Such information will need to be gathered continuously and will incur extra management costs.